

**Listing of Claims:**

This listing of claims replaces all prior versions and listings of claims in the application.

1-37. (Canceled)

38. (Currently Amended) ~~A radiation detecting system defined in claim 37,~~ A radiation detecting system comprising:

an optical fiber cable adapted to emit light at a region where radiation is applied and transmitting the emitted light,

photoelectric conversion means connected to at least one end of said optical fiber cable,  
and

processing means detecting when radiation is applied in accordance with an output signal of said photoelectric conversion means,

wherein said optical fiber cable further includes at least one detect portion, wherein the light emitted at said detect portion when radiation is applied to said detect portion is transmitted within said optical fiber cable, and wherein said optical fiber cable further includes:

an optical fiber having; having an optical transmission core extending along one direction to transmit light emitted at said detect portion;

a clad layer covering over a peripheral surface of said core; and

a scintillator material dispersed in said clad layer and emitting light when radiation is applied, a radiation-shielding layer covering substantially over a periphery of said optical fiber,

wherein a gap is provided with locating in at least one part of said radiation-shielding layer as said detect portion, and wherein said gap is formed over the entire length in the circumferential direction of said optical fiber.

39. (Currently Amended) A radiation detecting system comprising:  
an optical fiber cable adapted to emit light at a region where radiation is applied and  
transmitting the emitted light,  
photoelectric conversion means connected to at least one end of said optical fiber cable,  
and  
processing means detecting when radiation is applied in accordance with an output signal  
of said photoelectric conversion means,  
wherein said optical fiber cable further includes at least one detect portion, wherein the  
light emitted at said detect portion when radiation is applied to said detect portion is transmitted  
within said optical fiber cable, and wherein said optical fiber cable further includes:  
an optical fiber ~~having, an~~ having a lightwave guide core extending along one direction to  
transmit light emitted at said detect portion;  
a clad layer covering over a peripheral surface of said core to make a light transmitted in  
said core shield within said core;  
a detecting layer covering over a peripheral surface of said clad layer, a scintillator  
material dispersed in said detecting layer and emitting light when radiation is applied, and  
a radiation-shielding layer covering substantially over a periphery of said optical fiber,  
wherein a gap is provided with locating in at least one part of said radiation-shielding  
layer as said detect portion, and wherein said gap is formed over the entire length in the  
circumferential direction of said optical fiber.

40. (Original) A radiation detecting system defined in claim 38, wherein said optical fiber cable further includes a reinforcing layer adapted to cover a peripheral surface of said optical fiber.

41. (Original) A radiation detecting system defined in claim 40, wherein said radiation-shielding layer includes bunch of reinforcing fiber extending along said one direction.

42. (Original) A radiation detecting system defined in claim 41, wherein said reinforcing fiber be secured on a periphery of said optical fiber with a tape winded around a periphery of said bunch of reinforcing fiber.

43. (Original) A radiation detecting system defined in claim 39, wherein said optical fiber cable further includes a reinforcing layer adapted to cover a peripheral surface of said optical fiber.

44. (Original) A radiation detecting system defined in claim 43, wherein said radiation-shielding layer includes bunch of reinforcing fiber extending along said one direction.

45. (Original) A radiation detecting system defined in claim 44, wherein said reinforcing fiber be secured on a periphery of said optical fiber with a tape winded around a periphery of said bunch of reinforcing fiber.

46. (Original) A radiation detecting system defined in claim 38, wherein said radiation-shielding layer is adapted to cover a peripheral surface of said reinforcing layer.

47. (Original) A radiation detecting system defined in claim 46, wherein said radiation-shielding layer is formed by winding a tape coated with lead.

48. (Original) A radiation detecting system defined in claim 39, wherein said radiation-shielding layer is adapted to cover a peripheral surface of said reinforcing layer.

49. (Original) A radiation detecting system defined in claim 48, wherein said radiation-shielding layer is formed by winding a tape coated with lead.

50. (Canceled) ~~A radiation detecting system defined in claim 38, wherein said gap is formed over the entire length in the circumferential direction of said optical fiber.~~

51. (Canceled) ~~A radiation detecting system defined in claim 39, wherein said gap is formed over the entire length in the circumferential direction of said optical fiber.~~

52. (Original) A radiation detecting system defined in claim 38, wherein said gap is formed in plural parts of said radiation-shielding layer along said one direction with a predetermined space.

53. (Original) A radiation detecting system defined in claim 39, wherein said gap is formed in plural parts of said radiation-shielding layer along said one direction with a predetermined space.

54. (Currently Amended) A radiation detecting system defined in claim 38 ~~through 36~~, wherein said optical fiber cable further includes a radiotransparent tegumentary layer is adapted to cover over a periphery of said radiation-shielding layer with locating as the most outer layer.

55. (Original) A radiation detecting system defined in claim 39, wherein said optical fiber cable further includes a radiotransparent tegumentary layer is adapted to cover over a periphery of said radiation-shielding layer with locating as the most outer layer.

56. (Original) A radiation detecting system defined in claim 38, wherein said scintillator material is inorganic scintillator material.

57. (Original) A radiation detecting system defined in claim 56, wherein said scintillator material is dispersed in said clad layer by way of dope.

58. (Original) A radiation detecting system defined in claim 57, wherein said scintillator material is dispersed in said detecting layer by way of dope.

59. (Original) A radiation detecting system defined in claim 39, wherein said scintillator material is inorganic scintillator material.

60. (Original) A radiation detecting system defined in claim 59, wherein said scintillator material is dispersed in said clad layer by way of dope.

61. (Original) A radiation detecting system defined in claim 60, wherein said scintillator material is dispersed in said detecting layer by way of dope.

62. (Original) A radiation detecting system defined in claim 38, wherein said radiation is at least one radiation selected from said group consisting of X-ray,  $\alpha$ -ray,  $\beta$ -ray, and  $\gamma$ -ray, and said scintillator material is emitted when any of X-ray,  $\alpha$ -ray,  $\beta$ -ray and  $\gamma$ -ray is applied.

63. (Original) A radiation detecting system defined in claim 39, wherein said radiation is at least one radiation selected from said group consisting of X-ray,  $\alpha$ -ray,  $\beta$ -ray, and  $\gamma$ -ray, and said scintillator material is emitted when any of X-ray,  $\alpha$ -ray,  $\beta$ -ray and  $\gamma$ -ray is applied.

64. (Original) A radiation detecting system defined in claim 38, wherein said optical fiber cable further includes a protective layer adapted to cover a peripheral surface of said clad layer.

65. (Original) A radiation detecting system defined in claim 39, wherein said optical fiber cable further includes a protective layer adapted to cover a peripheral surface of said detecting layer.

66. (Original) A radiation detecting system defined in claim 38, wherein said core is formed of quartz glass.

67. (Original) A radiation detecting system defined in claim 39, wherein said core is formed of quartz glass.

68. (Original) A radiation detecting system defined in claim 38, wherein said clad layer is formed of transparent polymer synthetic resin.

69. (Original) A radiation detecting system defined in claim 39, wherein said clad layer is formed of transparent polymer synthetic resin.